

Remarks

Claims 13 and 19 were rejected under 35 U.S.C. 112, second paragraph.

Claims 13 and 19 have been amended to overcome this rejection.

Claims 1 to 4, 6, 8, 10, 11, 13 to 17, 19, and 20 were rejected under 35 U.S.C. 103(a) as obvious over O'Neill et al. ("O'Neill"). In O'Neill, a man in a protective suit carrying a backpack enters a room and sprays areas that are believed to be contaminated. In Applicant's invention, the enclosure is treated from the outside, and no person enters the enclosure. Having a person enter a contaminated room to decontaminate it is unsatisfactory for a number of reasons:

(1) In order to decontaminate the inside of a room so that it is completely safe for human habitation, it is necessary to expose the contaminants to hydroxyl free radicals for a period of time sufficient to ensure that the hydroxyl free radicals have reacted with all of the contaminants and have destroyed them. Depending upon the types of contaminants and their concentrations in the room, this may require several hours of exposure. Some contaminants may be in drawers or folders or otherwise not easily accessible.

Also, since hydroxyl free radicals react with many chemicals, a large proportion of the hydroxyl free radicals may be used up by reacting with inert materials, cell membranes, dead cells, lipo-proteins and other structures that are not necessarily dangerous to people. Large amounts of hydroxyl ions and longer contact times are then required to assure complete decontamination of the much smaller portion of

materials that are dangerous.

If someone enters the room and sprays different areas, he will not achieve a uniform level of hydroxyl free radicals and some areas will be inadequately treated. As O'Neill notes (column 1, line 42), the lifetime of the hydroxyl ion is very short, which means that fresh hydroxyl free radicals must be generated for at least the amount of time required for the hydroxyl free radicals to destroy all of the contaminants. This cannot be accomplished by momentarily spraying an area of a room, then moving on to another area. The entire room must be kept at the high concentration of hydroxyl free radicals required by Applicant's claims (at least 10^{16} molecules/cc) for the entire time needed.

(2) A person in a suit is at risk should the suit tear, leak, or become damaged or inoperable while he is inside the room.

(3) A person can carry only a limited supply of chemicals for making hydroxyl free radicals and repeated trips into the room require him to be decontaminated each time he leaves the room.

(4) Ozonizers require high voltage discharge tubes and UV lights also require electricity. The amount of electricity that can be supplied by portable batteries is limited and it is difficult for a man to walk through a room and around obstacles dragging a high voltage electric power line.

(5) A man in a suit cannot treat enclosures that are too small to easily fit into or

move around in.

All of Applicant's claims now require that that the apparatus must generate the hydroxyl free radicals without any person entering the enclosure. That is not possible in O'Neill's invention, nor does O'Neill suggest it.

All of Applicant's claims require a hydroxyl free radical concentration of at least about 10^{16} molecules /cc. O'Neill uses a concentration of "on the order of" 10^{11} molecules/cc (column 3, line 56), which is 100,000 times less than required by Applicant. It is not obvious to generate 100,000 times more hydroxyl free radicals than used by O'Neill.

All of Applicant's claims further require a pump for pumping gas out of the enclosure and means for detoxifying the gas pumped out. There is no disclosure or suggestion in O'Neill for these requirements. (Pumping gas out and detoxifying it is done so that residual ozone and other undesirable gases are not released to the environment (see paragraph [0009]).)

All of Applicant's claims also require that the enclosure must be sealed. (See paragraph [0016], line 4, and paragraph [0017], line 2, for support.) Nothing in O'Neill suggests sealing the room.

Applicant's Claims 3, 13 to 17, 19, and 20 specifically requires the ozonizer or mixing to be outside the enclosure, while O'Neill's ozonizer is inside the enclosure.

Applicant's Claim 6, as amended, requires means for maintaining the inside of

the enclosure at a lower temperature of about 0 to about 15°C in order to make the treatment more effective (see paragraph [0014]). O'Neill does not cool the room prior to treatment.

Applicant's Claim 8, as amended, requires a cold trap, which is also not suggested by O'Neill.

For these reasons, Applicant's claims are not obvious over O'Neill.

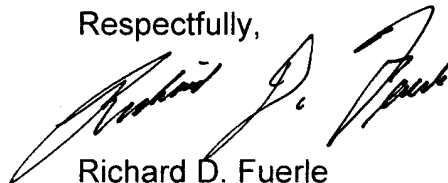
Claim 9 was rejected under 35 U.S.C. 103(a) as obvious over O'Neill further in view of Teague. O'Neill has been discussed. Teague is cited to show that ozone is efficacious in killing anthrax. However, Teague uses ozone as the decontaminant, not hydroxyl free radicals, as required by Applicant's claims. Furthermore, all of Applicant's claims now require that the enclosure must be sealed. Teague uses a tunnel through which poultry is passed on a conveyer belt, so the tunnel cannot be sealed. Applicant's claims also require a pump for pumping gas out of the enclosure and means for detoxifying that gas. O'Neill has no provision for preventing the escape of gases to the environment.

Claims 5, 7, 12, and 18 were rejected under 35 U.S.C. 103(a) as obvious over O'Neill further in view of Lincoln et al. ("Lincoln"). O'Neill has been discussed. Lincoln was cited to show "UV radiation to form ozone, then with continued irradiation and the addition of oxidizable constituents such as nitrogen dioxide, hydroxyl radicals form in the activated air. The relative humidity is maintained at least at 25%." Lincoln does not treat the inside of an enclosure. Rather, Lincoln treats a contaminated air stream.

Thus, Lincoln is decontaminating air, rather than surfaces inside an enclosure, as Applicant does, and it is not obvious how to apply Lincoln's teachings to that problem. It is well settled that if a proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

All of the claims are now believed to be allowable over the references cited and reconsideration and allowance of all of the claims are therefore requested. The Examiner is invited to call Applicant's attorney at (716) 774-0091 to resolve any remaining problems.

Respectfully,



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